Problem E
Photo Encoding

Time Limit: 1 second Memory Limit: 1GB

You've been tasked with printing some of your old family photos. These photos are ancient – not only are they black and white, but they are also incredibly pixelated! In fact, each photo can be represented as an $n \times n$ grid of pixels, where each pixel is either black or white.

Before you print each photo, you want to buy a frame that perfectly fits an $n \times n$ photo. However, you realize that you do not know n (the dimensions of the photo are unknown)! To make things worse, your computer stores the photo in an unreadable binary format – the only information you can recover about this photo is the list of Manhattan distances of each black pixel from the top-left pixel. The Manhattan distance between two pixels at (r_1, c_1) and (r_2, c_2) is $|r_1 - r_2| + |c_1 - c_2|$.

For example, the 5×5 photo in Figure E.1 corresponds to the list $[1, 4, 4]$. You notice that there are multiple possible photos that could correspond to the same list. As an example, the 4×4 photo shown in Figure E.2 also corresponds to the list $[1, 4, 4]$.

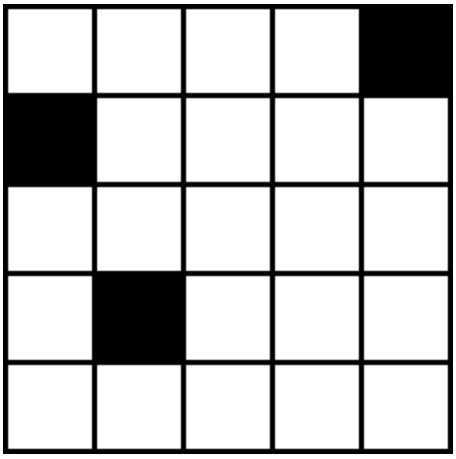


Figure E.1: A 5×5 photo that corresponds to $[1, 4, 4]$.

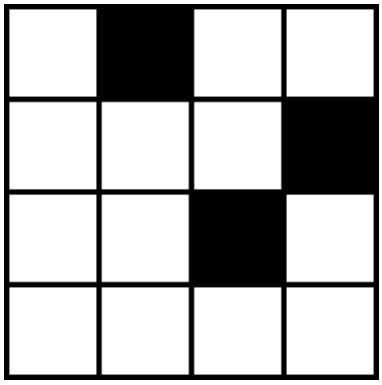


Figure E.2: A 4×4 photo that also corresponds to $[1, 4, 4]$.

With this in mind, you want to be prepared when buying the picture frame. Given a list of Manhattan distances, can you determine the smallest possible n such that there exists an $n \times n$ photo corresponding to this list?

Input

The first line of input contains one integer m ($1 \leq m \leq 1\,000$), the number of black pixels in the photo.

Each of the next m lines contains a single integer between 0 and 200 (inclusive), representing the Manhattan distance from one black pixel to the top-left pixel of the photo. The distances are given in ascending order and are guaranteed to correspond to a valid photo.

Output

Output a single integer, the minimum side length n such that there exists an $n \times n$ photo corresponding to the input list.

Sample Input 1	Sample Output 1
3 1 4 4	4

Sample Input 2	Sample Output 2
8 0 1 3 5 5 5 5 6	5